



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,633	01/31/2006	Katsuo Kazahaya	0523630031	7544
20277 7590 07/10/2008 MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096				
EXAMINER				
MILLER, DANIEL H				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
07/10/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Office Action Summary

Application No.

10/566,633

Applicant(s)

KAZAHAYA ET AL.

Examiner

DANIEL MILLER

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 01/31/2006, 7/14/2006, 9/14/2006, 3/27/2007, 7/30/2007, 8/24/2007
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I claims 1-16 in the reply filed on 3/27/2008 is acknowledged.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Wherein, applicant has claimed a diamond grain structure in the shape of a Japanese Cedar leaf, it is not clear what shape applicant intends to claim or if applicant intends to claim a shape. All leaves on a plant are not necessarily uniformly shaped. The scientific name (i.e. genus and species) of the plant are not adequately identified, so it is not clear which plant the applicant is identifying. Further, it is not clear how the grains would "form like" the leaves. They could be grown in the same manner of the leaf (with water and sunshine), or in the same growth pattern, or could end up a similar shape. Finally it is still not clear how similar and to what shape the grains must conform too. Correction required.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 14 and 16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Phillips (US 5,571,615).

Phillips teaches a cement carbide substrate having a diamond film coating having a grain size of less than about 0.5 microns; within applicant's claimed range (abstract, and claim 2). The diamond coating has a thickness of greater than about 10 micrometers (column 4 lines 50-60). The reference discloses a superior smooth surface (see comments on figures), but does not specifically disclose the claimed surface roughness. However, given that the diamond film has a substantially similar thickness and grain size and is produced via CVD methods, similar to applicant's disclosed method, therefore would be expected to have substantially similar surface roughness. In the alternative; it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a low surface roughness diamond film by employing known processing conditions for diamond films in order to obtain a surface roughness as low as possible; including a surface roughness less than 0.2 microns, as claimed, since a smooth diamond surface is highly desired by Phillips.

Regarding claims 2-8 and 14 and 16, Phillips discloses a superior smooth surface (see comments on figures) produced via a CVD process, but does not

specifically disclose the claimed surface roughness. However, given that the diamond film has a substantially similar thickness and grain size and is produced via CVD methods, similar to applicant's disclosed method (see embodiments in the instant specification); the diamond film would be expected by one of ordinary skill to have substantially similar physical properties and characteristics as claimed. It is not clear that there are any processing conditions that are different between Phillips and the instant claimed invention that would produce differing characteristics.

In the alternative; it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a diamond film of the claimed crystal structures and orientation known in the art which have high aspect ratio within applicant's claimed range (i.e. columnar structures having high aspect ratios). It further would have been obvious to provide any desired thickness including a single crystal thicknesses, and an optimized hydrogen content by varying the processing time and other processing conditions (i.e. pressure; as taught by Phillip see column 4 regarding CVD processing) in order to obtain a diamond film ideal for particular applications limiting the hydrogen content, consistent with hydrogen contents' effect, known to one of ordinary skill, on the physical properties of the diamond film. No patentable distinction is seen.

Regarding claim 4, it is noted that to the extent to which the term is definable the grain shape is considered to "form like" a Japanese Cedar plant.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (US 5,571,615) in view of Kembaiyan et al (US 2004/0060742).

Phillips teaches a cement carbide substrate having a diamond film coating having a grain size of less than about 0.5 microns; within applicant's claimed range (abstract, and claim 2). The diamond coating has a thickness of greater than about 10 micrometers (column 4 lines 50-60). The reference discloses a superior smooth surface (see comments on figures), but does not specifically disclose the claimed surface roughness. However, given that the diamond film has a substantially similar thickness and grain size and is produced via CVD methods, similar to applicant's disclosed method, therefore would be expected to have substantially similar surface roughness.

Kembaiyan teaches a tungsten carbide body containing cobalt and chromium binder material [0023]. Further, the carbide body has a diamond layered face covering the body [0025]. The Cobalt binder can be present between 2% and 12% of the body (see claim 10 ref.); overlapping applicant's claimed range. The tungsten carbide is present at least 80% of the body in some embodiments and from 30% to 99%

Art Unit: 1794

dependent upon the embodiment (see claims 2 and 25-27 ref). Therefore, the disclosed ranges overlap applicant's claimed ranges of each material.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a carbide body, as taught by Kembaiyan, and optimize the level of cobalt and chromium binder within the ranges disclosed by Kembaiyan (above) to within the corresponding levels claimed by applicant in order to provide the most effective tool body having the most advantageous physical characteristics (i.e hardness and wear resistance).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MILLER whose telephone number is (571)272-1534. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571)272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel Miller/
Examiner, Art Unit 1794

/KEITH D. HENDRICKS/
Supervisory Patent Examiner, Art Unit 1794